2005-06 NORTHERN BOBWHITE POPULATION STATUS REPORT

KENTUCKY DEPARTMENT OF FISH AND WILDLIFE RESOURCES

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METHODS

The 2005-06 Northern Bobwhite Population Status Report is a compilation of three surveys the Kentucky Department of Fish and Wildlife Resources conducts annually to monitor quail production and hunter success. First, the Quail Wing Survey provides samples that can be used to determine the age and sex of quail. Juvenile quail wings collected from successful quail hunters across the state are backdated to determine the hatch date. Therefore, we can identify peak hatching and length of the nesting season. Additionally, juvenile to adult female ratios can be generated to estimate annual recruitment rates. Second, the Quail Hunter Log Survey summarizes hunting activity and success of hunters across the state. With that information, we can create population trends from flush and harvest data and track hunter effort and success. Finally, the rural mail carriers of Kentucky contribute observations from their routes through the Mail Carrier Survey. The last full week of July, rural route drivers record quail observations and miles driven. We use that information to develop an index of the population and as a means to forecast the upcoming hunting season.

All surveys are strictly voluntary and we strongly encourage all Kentucky quail hunters and rural mail carriers to participate in these surveys. Hunter cooperators receive this report, detailing the past year's hatch, hunting season results, and expectations for the upcoming season. Cooperators also receive a new hunting log and wing envelopes for the upcoming season and a small gift of appreciation for their participation. Participating mail carriers receive a subscription to *Kentucky Afield* magazine for their support.

RESULTS AND DISCUSSION

I. Quail Wing Survey

Successful northern bobwhite hunters were surveyed by a volunteer mail-in method whereby wing collection envelopes were provided. Envelopes were distributed directly to all cooperators from previous years and to new cooperators through county conservation officers and regional wildlife division personnel upon request. Supplies of envelopes were also made available at the KDFWR Headquarters, Minor Clark Fish Hatchery, and all KDFWR Wildlife Management Area offices.

Age of the harvested birds was determined by measuring the length of the outermost primary (Petrides 1942, Petrides and Nestler 1943, Rosene 1969). Juveniles were backdated from date of harvest to determine the primary hatching dates for the nesting season. Hunters in the field, utilizing instructions on the wing collection envelopes, determined the sex of collected individuals.

During the 2005-06 northern bobwhite hunting season, 48 successful quail hunters mailed in 285 wings from 104 hunts across 28 counties (Appendix A). Sixty-nine wings could not be backdated, either because the individuals were juveniles greater than 150 days of age, or the wings were too damaged. The proportion by quail age class was

82.1% juvenile and 17.9% adult. The productivity estimate was 15.6 juveniles per adult hen from this year's sample. Overall, 59.5% of the birds were male and 40.5% were female.

Approximately 75% of the hatch in 2005 occurred before September 1st (Figure 1). The September 1st date is important, because birds hatched after this date are expected to have low survival and are not likely a part of next spring's breeding population.

The peak hatch spanned from mid July to late August (Figure 2). The chronological distribution is typical compared to the l9-year survey period, however the overall hatch dates are later than anticipated based on historical reports prior to initiation of this survey. Earlier work conducted on a western Kentucky population of quail showed that the majority of the hatch was over by the first two weeks of July (1957-58 P-R reports). Likewise, a study in Indiana showed the primary hatch occurring before the middle of July (Reeves 1954). However, nearly all the data from this survey have indicated major portions of the hatch in Kentucky occurring during the last two weeks of July and first two weeks of August. The 2005-06 data follow that trend.

Early season hunters occasionally encounter undersized birds. Kentucky's later nesting season increases its likelihood. Fortunately, most undersized birds would not have survived the winter, so their harvest is of little consequence to the population. Quail grow out of the "squealer" stage about 70 days of age, and they have plumage and flight capabilities similar to adult birds at that time. However, the 70-day old quail will weigh less than an adult. A 90-day old quail is indistinguishable in size and plumage characteristics to the untrained observer. At the November 1st opening, 66% of the juvenile birds were 70 days old or older and 41% of the juveniles were at least 90 days old. By comparison, the 2005 hatch was somewhat later than the 19-year average, but the difference was minimal (Figure 3). Drought conditions in the late spring and early summer may have contributed to that difference.

II. Hunter Log Survey

The Quail Hunter Log Survey is a diary-type log that hunters keep to date throughout the hunting season. Hunters record specific information about their hunts including date, hours hunted, number of hunters, coveys flushed, number of birds harvested, among others. Hunt data is divided weekly and monthly to monitor differences throughout the season.

Hunting logs were received from 35 hunters, who averaged 11.2 hunting trips each, lasting 3.2 hours. Data was provided from 392 hunts in 48 counties across the state (Appendix B). On average, hunters harvested 0.97 quail and wounded 0.11 quail. Hunters reported harvesting 59.6% of the birds shot at and wounding 6.6%. Assuming wounded individuals died, hunting related mortality of fired upon birds was 66.2%.

Hunting pressure increased slightly as the season progressed (Figure 4). Two distinct drops in effort by week were observed and corresponded to the week leading up to the opening day of deer firearms season, and the week leading up to the December

muzzleloader deer season. Overall, hunting pressure was similar to the 2004-05 hunting season.

The most important data collected from the hunter logs are the flush and bag rates. In 2005-06, hunters flushed 0.26 coveys/hr (0.84/hunt) and harvested 0.51 birds/hr (1.63/hunt). The most covies flushed on a single hunt was 6, whereas the maximum harvest by a single hunting party was 12 quail. The rate at which covies were flushed fluctuated throughout the season, and harvest rates were variable as well (Figure 5).

According to our data, the 2005-06 season was poor overall. Flush and harvest rates were the lowest they have been in the 17-year history of the survey (Figure 6). Trends in the flush and bag rates are decreasing, and the 2005-06 hunting log data did nothing to reverse this trend. Spring and summer conditions in both 2004 (too wet) and 2005 (too dry) were far from optimal, and hunters experienced the result of poor breeding conditions. Sample sizes are too small to break out data regionally.

III. Mail Carrier Survey

The Mail Carrier Survey gives us a glimpse of what we can expect for the upcoming season. The survey is the oldest in the program being completed for 45 years. Although no population estimates can be derived from this data, it does provide valuable trend data showing whether the population is up, down, or stable.

Volunteer mail carriers record all observations of quail and rabbits as they travel their normal mail delivery routes. The blank survey cards are sent to the postmasters 1week prior to the census period, which was the last full week (6 delivery days) of July. Each observer recorded the number of days surveyed, the length of the route, and each quail observation on the card. The state of Kentucky is divided into four weather divisions for comparison of quail data (Appendix C).

In 2006, mail carriers returned 715 of the approximately 1,600 survey cards issued, which corresponds to a 44.6% response rate. Rural carriers covered 235,301 miles and observed 1,382 quail. The statewide observation rate was 0.58 quail/100 miles traveled, an 18% increase from 2004. The western region continues to lead the survey with 41.2% of the observed quail, and it was up 55% from 2005 observations. The central and eastern regions also reported increased observation rates, whereas the bluegrass region showed a large decrease (Table 1). This year's surveyed showed a rebound from the lowest statewide survey results on record in 2005. Since 1960, mail carrier data have shown a steady decline in Kentucky's quail population (Figure 7). The downward progression corresponds to an average 0.9 % decline per year.

Weather regions have shown differing capacities to produce quail. Historically, the western and central weather regions have had the highest propensity to produce and sustain quail. For example, the western region originally contributed 50 percent of mail carrier quail observations and heavily affected the statewide results. Each year the regions become more similar as populations decline (Figure 8). Therefore, the quantity and quality of quail habitat in the west and central regions are approaching those of the eastern and bluegrass regions. Cleaner agricultural practices, fewer fallow areas, and

widespread fescue plague the quail of the state, and it is particularly evident in western Kentucky by the plummeting mail carrier index. On the bright side, these data can help focus our efforts to maximize management and generate the largest northern bobwhite response possible.

SUMMARY

Last year's hunting data corresponded well with last year's Mail Carrier Survey. A significant decrease in quail observations seems to have translated into a corresponding decrease in the number of quail flushed & harvested per hour during the season. The survey is conducted during the peak of the breeding season (according to the information collected from our wing cooperators), and the outcome of birds nesting during the survey may be critical to the quality of the upcoming season. So, the Mail Carrier and Hunter Log Survey may not always match. Generally, a good Mail Carrier Survey should correspond to a good hunting season, but a poor Mail Carrier Survey does not guarantee poor hunting conditions. Last year, the Mail Carrier Survey did predict a poor season, and the cooperators reported that their success was down. More times than not, the Mail Carrier Survey accurately predicts whether the season will be up, down, or stable.

The Missouri Department of Conservation conducts a similar survey to Kentucky's hunter logs and measures hunt quality by the following:

1 hour per covey flush = excellent
2 hours per covey flush = good
3 hours per covey flush = poor

Utilizing this rating system, the 2005-06 quail-hunting season (3.85 hours per covey flush) in Kentucky would be rated beyond poor!

In summary, we had a poor nesting season in the summer of 2005 despite wing data showing harvested adult female to juvenile ratios of 1:15.6. The peak hatch timing was slightly later than normal. Hunting was significantly worse than the 2004-05 season as coveys flushed per hour decreased 43.5% and harvest per hour decreased 51.6%. The 2006 Mail Carrier Survey indicates the 2005-06 season should be much better than last year. Hunting should be best in the western weather region of the state, because the mail carrier results showed a 55% increase and highest encounter rate. The eastern weather region improved by 50%, but quail encounters are not as high as the west. Still, eastern hunters should experience a better season as well.

ACKNOWLEDGMENTS

We would like to say a special thanks to all those who have participated in the various small game surveys over the years. Your cooperation provides us with valuable data necessary to make wise management decisions regarding quail populations and hunting seasons. With that in mind, we ask that you recruit your friends and neighbors who also hunt quail to join you in being a hunting cooperator. We need many more cooperators to accurately track quail populations across the state.

As expected, poor hunting conditions resulted in a decrease in quail survey participation last year, with only 35 hunters completing hunting logs. Fortunately, those hunters did a good deal of hunting (over 390 hunts)! Nevertheless, we would like to have at least 1,000 hunts well distributed across the state. The more cooperators we have, the more accurate picture we have of our quail populations. The hunting logs are available in the 2005-06 Hunting and Trapping Guide, on the internet (www.fw.ky.gov), through wildlife/boating officers, private lands biologists, and wildlife management area staff, or by contacting the Kentucky Department of Fish and Wildlife Resources at #1 Sportsman's Lane. Frankfort, KY 40601 (1-800-858-1549). Thank you to all whom participated this year, and we hope to hear from you and all of your hunting partners in next season's surveys.

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Cover photo from Quail Unlimited Mall website (www.qumall.com). Artist Richard Plasschert's 1983 Quail Stamp print.

Table 1. Comparison of total quail/100 miles observed by rural mail carriers.

WEATHER DIVISION	TOTAL QUAIL/100 MILES			PERCENT CHANGE	
	MEAN			MEAN	
	1960-2006*	2005	2006	2006/1960-2006	2005/2006
Western	2.36	0.60	0.93	-60.6	55.0
Central	1.29	0.55	0.56	-56.6	2.0
Bluegrass	0.85	0.55	0.40	-52.9	-27.3
Eastern	0.60	0.24	0.36	-40.0	50.0
Statewide	**1.29**	**0.49**	**0.58**	**-55.0**	**18.3**

*No data available for 1964.

Figure 1. Quail index from mail carrier survey in Kentucky, 1960-2006.

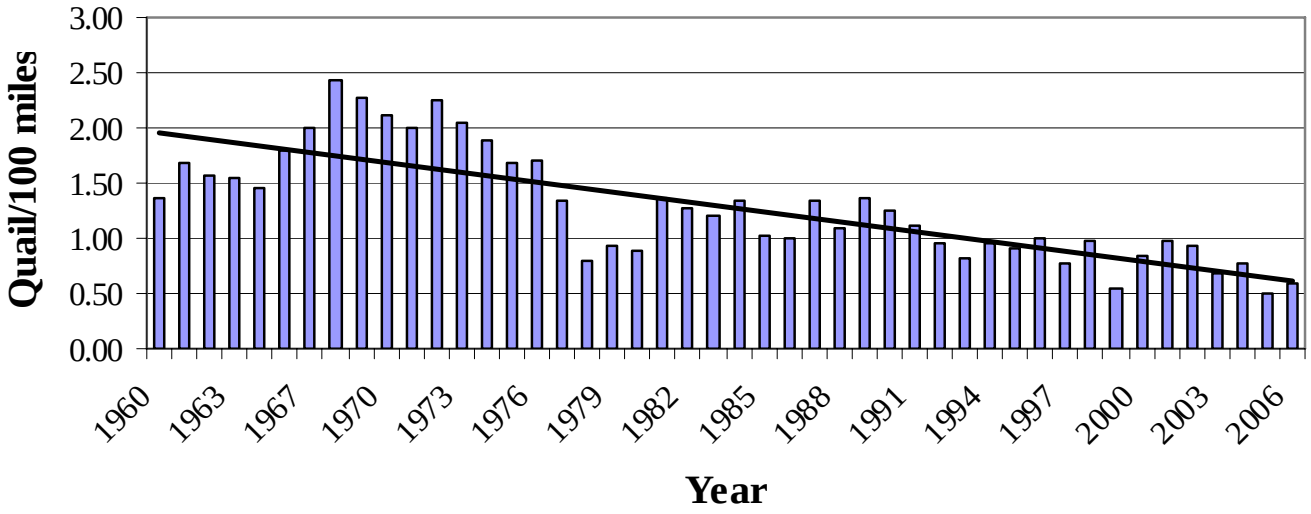
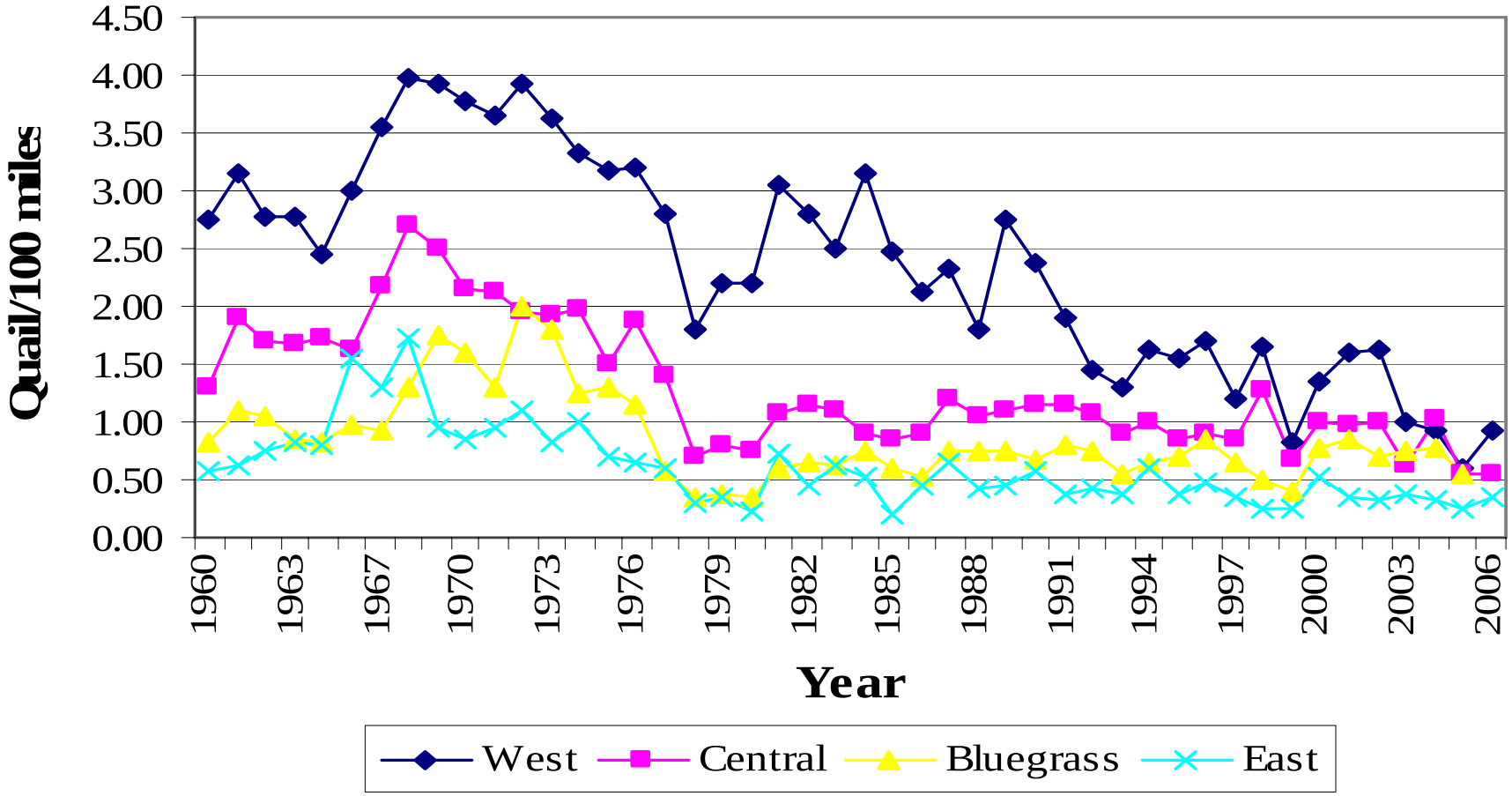
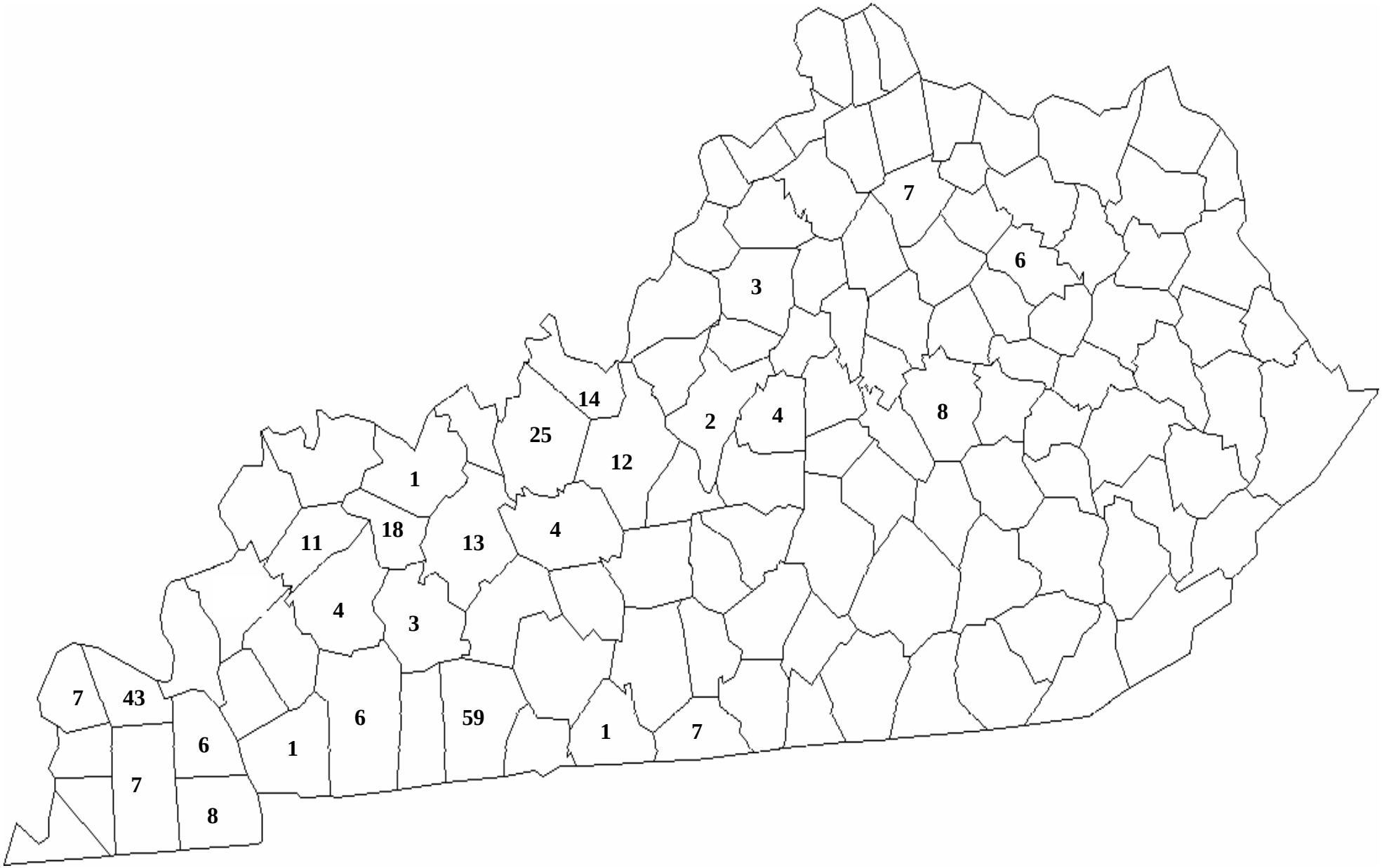


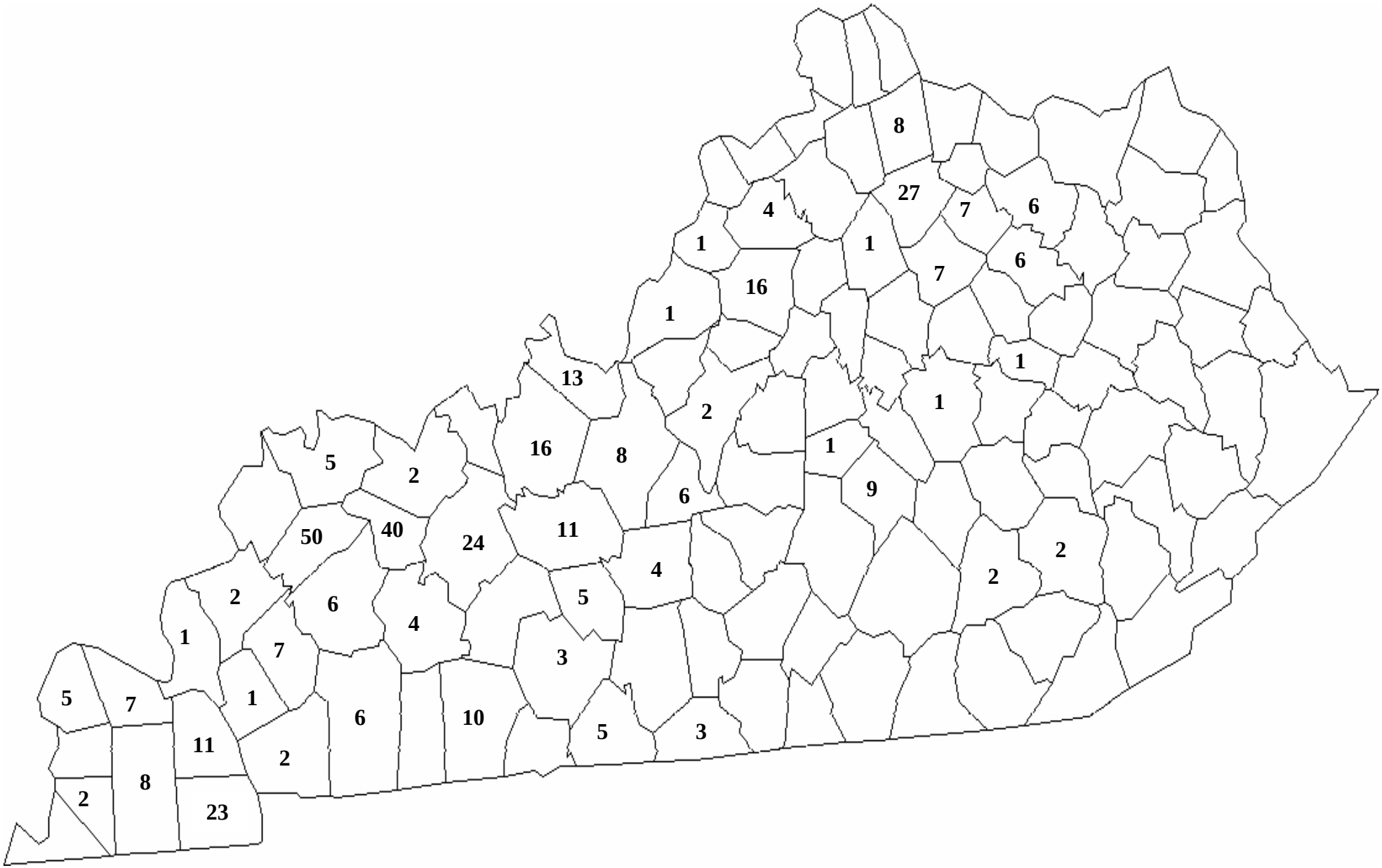
Figure 2. Quail indices from mail carrier survey by weather region in Kentucky, 1960-2006.



Appendix A. Number of wings collected per county for the 2005-06 Quail Wing Cooperator Survey.



Appendix B. Number of hunts reported per county for the 2005-06 Quail Log Hunter Cooperator Survey.



Appendix C. Weather Bureau divisions utilized for tabulating quail observation data.